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Section : 2

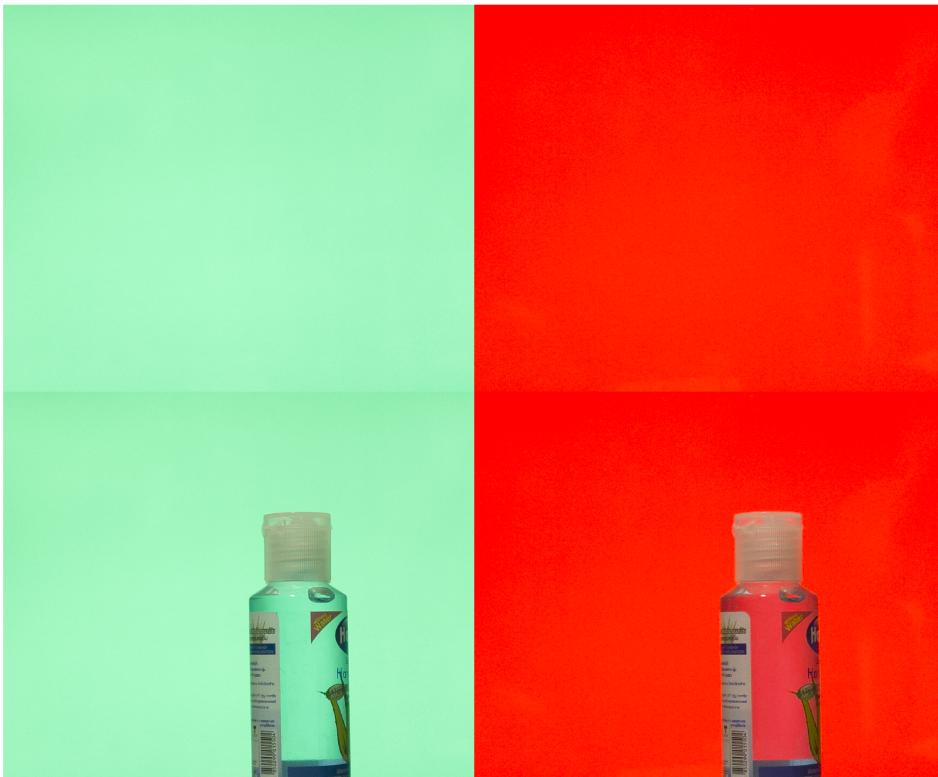
Triangulation Matting Project

Read all 4 images

```
bg1 = imread("bg1.png");
bg2 = imread("bg2.png");
fg1 = imread("fg1.png");
fg2 = imread("fg2.png");
```

Display all 4 images

```
imshow([bg1 bg2; fg1 fg2])
```



Convert to double

```
bg1 = im2double(bg1);
```

```
bg2 = im2double(bg2);
fg1 = im2double(fg1);
fg2 = im2double(fg2);
```

Compute alpha

```
numera = (fg1(:,:,1)-fg2(:,:,1)) .* (bg1(:,:,1)-bg2(:,:,1))+...
          (fg1(:,:,2)-fg2(:,:,2)) .* (bg1(:,:,2)-bg2(:,:,2))+...
          (fg1(:,:,3)-fg2(:,:,3)) .* (bg1(:,:,3)-bg2(:,:,3));
denomi = (bg1(:,:,1)-bg2(:,:,1)).^2+...
          (bg1(:,:,2)-bg2(:,:,2)).^2+...
          (bg1(:,:,3)-bg2(:,:,3)).^2;
alfg = 1- (numera ./ denomini);
```

Compute foreground colors of object from background 1

```
comfg1 = (fg1-((1-alfg).*bg1))./alfg;
```

Compute foreground colors of object from background 2

```
comfg2 = (fg2-((1-alfg).*bg2))./alfg;
```

Display the extracted foreground object / matte from background 1 and 2

```
imshow([comfg1,comfg2]);
```



Perform the composition of extracted foreground object from background 1 and 2 with the new WHITE background image

```
whbk = ones(size(bg1));
comfg1(isnan(comfg1)) = 1;
```

```
comfg2(isnan(comfg2)) = 1;  
cwh1 = alfg.*comfg1 + (1 - alfg).*whbk;  
cwh2 = alfg.*comfg2 + (1 - alfg).*whbk;
```

Display the composition of extracted foreground object from background 1 and 2 with the new WHITE background image

```
imshow([cwh1,cwh2]);
```



Read new background image to do the composition and display it.

```
img = imread("nichakulk.png");  
imshow(img)
```



Perform the composition of extracted foreground object from background 1 and 2 with the new background image

```
imgd = im2double(img);
[g,h] = size(imgd);
[z,k] = size(cwh1);
cwh1 = padarray(cwh1,[g-z, ((h-k)/3)],"pre");
cwh2 = padarray(cwh2,[g-z, ((h-k)/3)],"pre");
alfg = padarray(alfg, [g-z, ((h-k)/3)], "pre");
im1 = imgd .* (1-alfg) + cwh1 .* alfg;
im2 = imgd .* (1-alfg) + cwh2 .* alfg;
```

Display the composition of extracted foreground object from background 1 and 2 with the new background image

```
imwrite(im1, 'nichakulk1.png');
imwrite(im2, 'nichakulk2.png');
imshow([im1, im2]);
```

